Amendments to the Claims:

1. (original) An interference cancellation system for use in conjunction with a base station having a main antenna for receiving signals from a plurality of remote users, wherein at least one interference source is known, the system comprising:

at least one directional antenna directed toward said at least one interference source, said antenna having a plurality of coplanar feeds that are located one quarter to one half wavelength apart from each other, each coplanar feed for receiving an RF signal;

means for weighting said RF signals received by said plurality of coplanar feeds to produce a cancellation signal;

first summing means for summing said weighted signals using a least mean square (LMS) algorithm; and

second summing means for summing said cancellation signal with signals received from said main antenna to produce an output signal substantially free from interference.

2. (original) The system of claim 1 wherein said weighting is performed using a predetermined factor α.

3. (original) The system of claim 2 wherein each said user is located within the narrow beam path of the directional antenna, and each antenna gain of remote user communicating with said base station is greater than $1/(1 - \alpha)$ relative to the main antenna.

4. (original) The system of claim 1, wherein said output signal is demodulated by an RF receiver to produce a baseband signal, said receiver being coupled to a plurality of modems for phase correction of said baseband signal.

5. (original) The system of claim 4, whereby each of said modems comprises:

means for producing a digital signal by quantizing the baseband signal, said digital signal comprising a data signal and a pilot signal;

means for deriving filter coefficients based on phase error due to RF carrier offset of the data signal;

means for compensating for channel distortion due to multipath effects;

means for determining bit error rate; and

means for automatic power control responsive to the bit error rate.

6. (original) The system of claim 4, wherein each said modem comprises:

an A/D converter coupled to a tracker;

a vector correlator coupled to the output of the A/D converter;

a carrier recovery phase-locked loop unit coupled to the vector correlator for producing filter coefficients in conjunction with the vector correlator;

an adaptive matched filter (AMF) with an input coupled to the A/D converter and the vector correlator and an output coupled to the tracker;

a plurality of channel despreaders coupled to the AMF output;

a Viterbi decoder coupled to the output of said plurality of channel despreaders; and

an automatic power control (APC) unit coupled to the Viterbi decoder.

7. (cancelled).

8. (currently amended) A method for interference cancellation for use in conjunction with a base station having a main antenna for receiving signals

from a plurality of remote users, wherein at least one interference source is known, comprising the steps of:

directing at least one directional antenna toward said at least one interference source, each directional antenna having a plurality coplanar feeds that are located one quarter to one half wavelength apart from each other, each coplanar feed for receiving an RF signal; and

cancelling an interference signal generated by said at least one known interference source, ~~The method of claim 7~~ wherein said cancelling step further comprises:

weighting the RF signals received by said coplanar feeds;

summing the weighted signals using a least mean square (LMS) algorithm to produce a cancellation signal;

summing the cancellation signal with signals received from the main antenna to produce an output signal substantially free from interference; and

comparing feedback from the output signal to the weighted signal until steady state is achieved.